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ABSTRACT

Thirty American and 30 Bristish first graders were administered a screenirg test to determine whether similar identifiable learning problems exist across cultures. Results of the Aston Index indicated significant differences between American and British Ss in one subtest of the Index's General Underlying Ability, and in two subtests of the Perfcrmance Ability measure. Findings were interpreted to provide limited acceptance of a hypothesis of no significant difference between American and Eritish Ss. Eight predictors of reading were found, ranging frcm vocabulary age at the highest level to visual sequential memory pictorial at the lowest significantly predictive level. (CL)

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LEARNING DISABILITIES -- CROSS-CULTURAL OR UNIQUELY AMERICAN?

by Gertrude M. Webb, Ed.

Despite the research of the last forty years, Divoky and others describe screening, diagnosis and remediation of learning disabled children as a "fantastic copout for not teaching them". They further describe L-D programs as caught up in mindless rounds of "identifying and prescribing, an American suburban syndrome to absolve parents and teachers of guilt for their children not succeeding."

Charges by Divoky[1] and others cause us to ask the following questions: Is what Divoky says true? Have forty years of research been wated? Have those who subscribe to educational programming based on learning strengths and weaknesses become L.D. cultists? Is the investment of American dollars in screening, identification and diagnosis of L.D. children a fad?

Alternatively, do identifiable learning problems exist in a substantial segment of early school attendees? Do such difficulties exist irrespective of socio-economic conditions, race, color, sex, age, educational aspiration, money, intelligence or culture? Prime purpose of this study is to respond to the contentions raised by Divoky by determining whether identifiable learning problems similar to those experienced by 11% of American first grade "high risk" learners exist in children of another culture (British) six months after entrance into formal schooling. It is the contention of the researcher that learning problems cross cultural lines and that learning disabilities are disorders in the thinking processes of an individual that exhibit themselves as deviations from the competency based norms of one's culture and threaten a healthy sense of one's emerging self.

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

[1] Divoky, Diane: Education's Latest Victim: The L.D. Kid, California Learning Magazine, Education Today Co., October, 1974

Over the last forty years research in the area of school readiness, "high risk" children and their learning problems, has developed independently in many countries of the world. There has been little sharing across national lines, the International Conferences in Learning Disabilities having been formally organized only within the last few years. There is currently no cross cultural study of "high risk" early school attendees.

This research attempts to determine if similar identifiable learning problems exist in a population of children in another culture (Great Britain) as exist in children in American first grades some six months after entrance into formal schooling. An attempt is made to determine the relationships between the measures of the Aston Index individually and as groups (General Underlying Ability, Performance Items, Family History) in their prediction of identifiable school learning problems.

The Aston Index was selected as the instrument to screen an English and an American randomly selected first grade sample to predict reading.

The Index consists of the following items:

General Underlying Ability

1. Picture recognition
2. Vocabulary
3. Goodenough
4. Copying geometrical designs

Family History

1. Laterality
2. Birth History
3. Knowledge of left and right
4. Socio-cultural setting

Performance Items

1. Write or copy name 3 times
2. Visual sequential memory
3. Digit - forward and reverse
4. Sound blending
5. Sound discrimination

The Index was devised by Drs. Margaret Newton and Michael Thomson from theoretical, empirical, clinical and observational experience as a first step toward early diagnosis of the British 'at risk' child by his classroom teacher. The approach generally is one of investigating the intrinsic skills children bring with them to the tasks of reading and spelling and the matching or mismatching of those skills required for academic learning.

The Aston Index was administered to the American sample of 30 randomly selected first graders at the 650-pupil Henry Whittemore Elementary School (kindergarten through Grade 6) in Waltham, an independently governed industrial city situated about 10 miles west of Boston, Massachusetts. Like Waltham, Birmingham, England is predominantly an industrial city. It's socio-economic stratification like Waltham's crosses all levels providing optimum opportunity for sampling representative groups. Presence of Aston University, a center of higher learning, in whose Department of Psychology the Index used in this study was designed, is one more similarity between Waltham where Brandeis University is situated. Both American and British children given the test had each had at least six months of formal schooling when the Aston Index was administered.

The chronological age range of the American sample was from 6 years to 7 years and 10 months; the British sample ranged from 5 and three quarter to 6 years. Note should be taken of the younger age (one year) at which the British children are introduced to formal schooling as compared to their American counterparts. The age differential between the samples raises a question of internal validity. Attempts to equate the sample chronologically were confounded by administrative policies relative to school entrance age in the schools of the communities being compared. Attempts to alter such policy would indeed be unrealistic, and in fact futile.

All children who have had formal schooling for six months are introduced to reading, writing and spelling. Some 11% of first graders in Waltham, Massachusetts, experience learning problems that cause school failure.[1] From a population of 125 first graders in a 650 pupil elementary school in Waltham a random sample of 30 was selected.

In England, children who have had formal schooling for six months are also introduced to reading, writing and spelling. Thirty children were used as the British sample in this study. Mean chronological and mental ages of the sample were computed.

To each child in the study the Aston Index was individually administered by a teacher or a teacher trainee near completion of his or her training in Curry College's Teacher Training program supervised jointly by the researcher, her assistant, and the head teacher in Reading and Learning Disabilities at the Waltham school, site of the testing. Testing for each child was by a team of two testers. The battery of tests were given in two sessions of 45 minutes each. Where possible there was a conference at school for the tester and the parent. Individual profiling was done by the researcher and shared with the school for appropriate educational programming as mandated by Massachusetts General Laws Chapter 766, Acts of 1972.

The t test was used to test the first null hypothesis,

Ho 1 Children in an English first grade do not differ from children in an American first grade six months after school entrance in identifiable school learning problems.

The .05 level of significance was sought. The criteria variables were the 13 scales of the Aston Index.

[1] Retardation Rate for First Graders, Waltham, Massachusetts, 1971-72.

Multiple regression analyses were used to test and determine the predictability of the 13 scales of the Index relative to school non-readiness (high risk) the dependent variable.

Ho 2 There is no difference in any individual or group of tests of the Index in their predictive ability of identifiable school learning problems.

Data was analyzed examining three prime issues: (1) reliability of the subtests of the Aston Index and the Stanford-Binet Reading Test (Primary Level I); (2) the null hypothesis of no difference in identifiable school learning problems of English and American first graders six months after entrance into formal schooling; (3) the null hypothesis of difference in any individual or any one of the three groups of the subtest of the Index (Group I - General Underlying Ability, Group II - General Background Factors, Group III Performance Ability) in their predicitive ability to reading. Measures used for data analysis were K-R 21 for reliability of the Index, t-Test for Ho 1 and Multiple Regression for Ho 2 measures of reliability are found in Table 1.

The hypothesis of no difference in identifiable school learning problems in English and American school children six months after school entrance was tested using the Aston Index as a predictor of reading. Four of the subtests in Group I, General Underlying Ability (General Underlying Ability, Picture Recognition, Vocabulary, Copying Designs, see Table 2) were found not to have significance. They measured one's ability to abstract one's ideas in words and shapes. One measure, Mental Age as determined by the Draw-a-Man, showed a significant difference. In the second group, Children's Laterality, showed no significant difference. In the third group, Performance Ability, five of the seven measures showed no significant difference in predicting reading.

They were Performance Ability, Free Writing, Visual Sequential Pictorial, Sound Blending, Sound Discrimination (see Table 2). The tests, measures of the ability to visually and auditorially discriminate, remember and seriate pictures were not significant nor were the scores on performance of tasks requiring visual-motor skills significantly different (see t table, Table 2). Acceptance of the hypothesis of no difference is in order for the identified variables.

Two subtests, one visual and the other auditory, Visual Sequential, Symbolic and Auditory Sequential Memory, showed significant difference between the American and English sample. Both of these tasks required integration of symbols--a higher level of informational processing than that of pictures. In one of the measures the ability to remember numbers in reverse order was the task assessed. The American sample had great difficulty with the concept of reversibility. The other subtest where significant difference was exhibited required sequencing symbols. In this case the American mean is substantially higher than the English mean. The question of the younger age of the British children and the advantage of developmental readiness for the American sample for this task might be raised. The hypothesis of no difference relative to the forenamed variables is rejected. Significant differences exist between the American and British samples in those learning tasks.

No significant differences between the American and British samples were found for four of the five subtests of General Underlying Ability (Group I), for Children's Laterality (Group II), and five out of seven subtests of Performance Ability (GroupIII). Thus, the American and British samples show no significant difference in ten of the thirteen subtests of the Aston Index and justify our acceptance of the original hypothesis of no difference in ten out of thirteen instances.

Since significant differences between the American and British samples exist in General Underlying Ability--one out of five times, in Performance Ability--two out of seven times, acceptance of the original hypothesis of no

difference must be qualified. However, note should be taken of the fact that the most significant difference between the American and English samples was assessed by the Visual Sequential Symbolic Subtest which measured by Kuder-Richardson 21 as shown in Table 1 was not reliable. The two other measures of significant difference, Mental Age as measured by the Draw-a-Man test and Sequential Memory had minimally acceptable reliability. The observed differences might well be minimized should the subtests' internal reliability be increased.

A significant measure of reading age was established (see Table 2,). The significant difference in two samples was not expected in this study. Rejection of the hypothesis of no difference between the American and British sample in reading age is in order.

Limited acceptance of our first hypothesis of no significant difference between the American and British samples in their identifiable school learning problems gives us a limited right to refute the Divoky charges of time spent in screening, diagnosis and remediation of learning disabled children as a "fantastic cop-out for not teaching them".

In this study we note similarities in learning difficulties predictive of reading in American and British first graders. Though there were areas of difference, the degree of similarity would seem to be worthy of educators' continuing investment of time and energy in the pursuit of more identifiable predictors of learning problems.

This study would not support Divoky's description of Learning Disabilities programs as "caught up in mindless rounds of identifying and prescribing, an American suburban syndrome to absolve parents and teachers of guilt for their children not succeeding." Comparison of American and British children in this study would seem to say that 40 years of research have not been wasted; that rather than calling the use of American dollars in screening, identification and diagnosis of Learning Disabled children a fad, that we would recognize the value

of the investment of money and time in the identification of early school learning problems as a potential investment in improvement of our teaching-learning methodology and more importantly in the development of school children with better basic school skills and the resulting improved sense of self-competence and self-worth.

The second hypothesis of no difference between any individual or group of tests of the Index in its predictive ability of identifiable school learning problems is rejected.

Table 3 supports the contention of eight potentially powerful predictors of reading ranging from Vocabulary Age at the highest level to Visual Sequential Memory Pictorial at the lowest significantly predictive level.

This study further identified certain factors as relatively significant across the cultures, the ability to visually order symbols, the degree of strength of a child's laterality being significantly predictive in both samples.

Though both lists of significant predictive variables find general underlying ability and total performance included, in the American sample general underlying ability scores are more highly predictive than total performance. The reverse is true in the English sample. The English researchers suggest a possible reason. Their sample was skewed to the higher economic levels (socio-economic groups 1 and 2). The relationship is plausible from the American point of view when the children selected in the Waltham sample were from one school situated in the oldest section of the city. The question of comparative socio-economic levels and possible increased number of slow-learners in the population is one meriting further examination.

The question of the relative predictive power of general underlying ability and performance items thus remains an unresolved issue though comparison of the means of the American and British samples (see Figure 1) establish high correlation in the Performance scores as well as in Vocabulary Age, often considered indicative of general underlying ability.

We would conclude that though 40 years of research have been spent in recognition of identifiable school-learning problems, we are merely beginning to site, to isolate, and evaluate those factors most predictive of success. The answers to that question of which individual and interacting factors are most predictive merits much more experimental research.

On the basis of this study it would appear that some first grade students regardless of cultural environment have greater difficulty than others in getting ready to read, that the kinds of difficulties in the English and American samples have many likenesses. Whether the differences are attributable to cultural difference and/or the smallness of the sample used in this study is unknown at this time.

Not to be overlooked is the fact that the test was designed for use in a particular culture. It was not intended to be a cross-cultural or multi-cultural instrument.

To resolve the question of predictive power of measures which identify school learning problems six months after school entrance, replication of this study with a large American sample is indicated.

Further internal reliability checks of the Picture Recognition, Sound Discrimination measures, but especially of the Visual Sequential Symbolic measure, are indicated before use of the Aston Index in totality as the instrument to measure and predict school learning problems. Consideration should be given to increasing the number of items in the Picture Recognition test. Substitution of the teapot with some more universally recognized item in both the Pi Picture Recognition and the Visual Sequential Pictorial tests is recommended.

Recognition of the difficulty in acquiring information related to family history in such a study suggests an inter-disciplinary approach to further research involving the skills from the field of Social Work.

Study of children not achieving in the first grade of a country whose

native tongue is not English would help to extend our knowledge in the field of cross-cultural, cross-language difficulties of children not achieving in school. Comparison of Hebrew-speaking with English-speaking children (where reading patterns differ greatly) would be of particular interest.

To minimize cultural bias on future studies of English and American samples, double testing is recommended, once with the Aston Index and once with an American instrument intended to identify early school learning problems e.g. Meeting Street School Test. In future testing of American-cross-language samples similar patterns of testing including necessary translation of instruments used are suggested.

Table 1

Kuder-Richardson 21 Internal Consistency Reliability Estimates for the Subtests of the Aston Index and Stanford-Binet Reading Test

Measure	Number of Items	Reliabilities
Aston Index		
Children's Laterality	10	.84
General Underlying Ability	20	.56
Sound Blending	10	.56
Copying Designs	18	.53
Performance Total	60	.44
Auditory Sequential Memory	12	.39
Visual Sequential Pictorial	10	.34
Writing Name	8	.33
Vocabulary Age in Years	10	.32
Draw-a-Man Mental Age	11	.30
Picture Recognition	8	-.01
Visual Sequential Symbolic	10	-.33
Stanford-Binet Reading (Primary Level I)	147	.94

Table 2

t-tests between Mean Scores from American and English Samples as Measured by Subtests of the Aston Index and the Samples Reading Ages

		Mean		Standard Deviation		t
		American	English	American	English	
1	General Underlying Ability	14.53	14.80	2.87	1.89	.46
2	Picture Recognition	7.43	7.71	0.73	0.46	1.86
3	Vocabulary Age	7.16	7.61	1.68	1.10	1.28
4	Mental Age - Draw-a-Man	7.03	5.69	1.85	1.40	3.35*
5	Copying Designs	5.90	6.31	1.67	1.21	1.13
6	Children's Laterality	7.13	6.34	2.91	1.94	1.29
7	Performance Ability	43.17	42.26	4.63	7.79	.56
8	Free Writing	6.52	5.66	1.30	1.71	1.44
9	Visual Sequential Symbolic	8.52	6.17	0.98	1.32	8.10*
10	Visual Sequential Pictorial	6.14	6.69	1.85	1.84	1.19
11	Auditory Sequential Memory	7.62	8.71	1.99	1.92	2.22*
12	Sound Blending	4.83	5.78	2.24	2.98	1.44
13	Sound Discrimination	9.48	9.63	0.69	0.92	.75
14	Reading Age	6.40	7.46	0.22	.93	5.8*

*$p < .05$

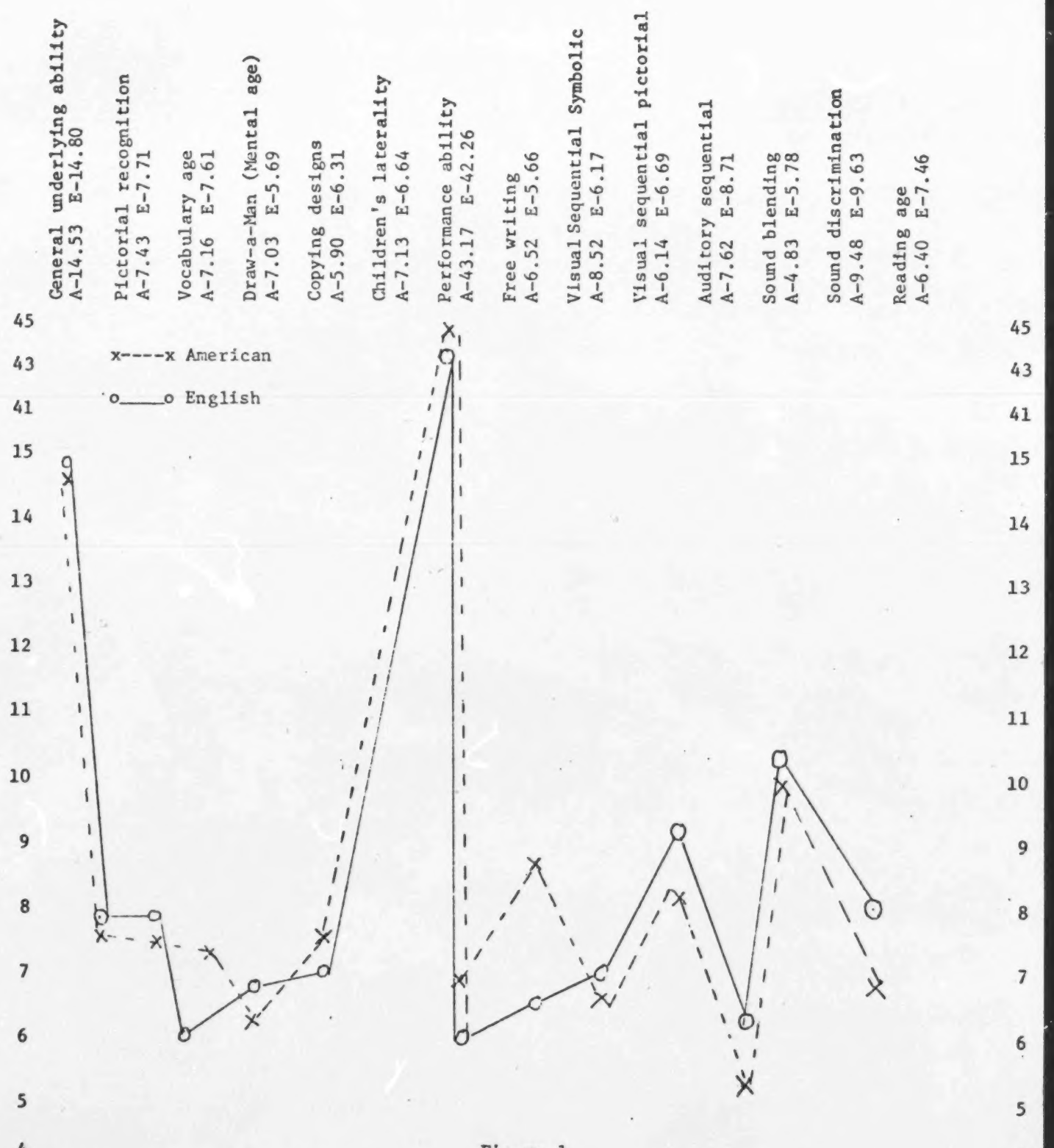

Figure 1
Profiles of Scores of American (A) and English (E) Samples as Measured by Subtests of The Aston Index and the Samples' Reading Ages

Table 3

Hierarchy of Predictive Power

of Aston Subtests and Reading

Independent Variable	Simple r	Multiple R
Vocabulary Age	0.37096	0.37096
Visual Sequential Symbolic	0.29247	0.46088
Child Laterality	0.22882	0.49869
Mental Age in Years	-0.04754	0.52429
General Underlying Ability Total	0.30845	0.54775
Total Performance	0.15305	0.55603
Sound Blending	0.27166	0.57252
Visual Pictorial	0.05395	0.58126
Sound Discrimination	0.03569	0.58920
Chronological Age in Years	-0.01342	0.59507
Auditory Sequential Memory (Reverse)	0.017694	0.59777
Picture Recognition	0.19762	0.59953
Copying Designs	0.07879	0.60097
Total	0.21600	0.60172

When the eight highest predictors were entered alone in the multiple regression analysis, no change in predictive power occurred. From Group I, General Underlying Ability, the variables Vocabulary Age in years and Mental Age in years were

Table 4

Comparison of American and British Analyses of Subtests of Aston Index Using Simple r's to Predict Reading

Measure	British Correlation	American Correlation
Vocabulary Age	.25	.37
Visual Sequential Symbolic	.63	.29
Child Laterality	.59	.23
Draw-a-Man	.31	.05
General Underlying Ability Total	.37	.31
Total Performance	.76	.15
Sound Blending	.68	.27
Visual Sequential Pictorial	.46	.05
Sound Discrimination	.52	.04
Auditory Sequential Memory	.50	.19
Picture Recognition	.28	.20
Copy Design	.15	.08

American study.

Table 5

Hierarchical Predictors of Reading

Using Aston Subtests with Simple r's

English Sample		American Sample	
1.	Performance Total	1.	Vocabulary Age
2.	Sound Blending	2.	Visual Sequential Symbolic
3.	Visual Sequencing Symbolic	3.	Children's Laterality
4.	Children's Laterality	4.	Mental Age
5.	Sound Discrimination	5.	General Underlying Ability
6.	Auditory Sequential Memory	6.	Total Performance
7.	Visual Sequential Pictorial	7.	Sound Blending
8.	Free Writing	8.	Visual Sequential Pictorial
9.	General Underlying Ability		